

0027

Act 1007/004

Cyprus Plateau Mining Corporation #2

P.O. Drawer PMC

Price, Utah 84501

(801) 637-2875



June 27, 1995

 Keith H. Sieber
 Vice President and General Manager

 Mr. Daron R. Haddock
 Permit Supervisor
 Division of Oil, Gas and Mining
 355 West North Temple
 3 Triad Center, Suite 350
 Salt Lake City, Utah 84180-1203

Re: Phase I Bond Release Evaluation, AMAX Coal Company, Castle Gate Mine, ACT/007/004, Carbon County, Utah.

Dear Mr. Haddock:

I would like to thank Steve Johnson and Wayne Western for taking the time to meet with me and AMAX's Consultants on June 15, 1995, regarding the aforementioned. The meeting was very beneficial in resolving the outstanding issues identified in the Division's April 27, 1995, letter "Technical Findings for Sowbelly Canyon Reclamation Project and As-Built Submittal".

Following the June 15, meeting, I instructed Bill Hendrickson (EarthFax Engineering) to generate a document stating the Division's findings followed by the recommended solutions, as understood by AMAX and its consultants.

The enclosed submittal from EarthFax, dated June 26, 1995, has been reviewed by me and I concur with Mr. Hendrickson's recommendations. AMAX Coal Company intends on implementing these recommendations to satisfy the Division's concerns and progress towards Phase I Bond Release.

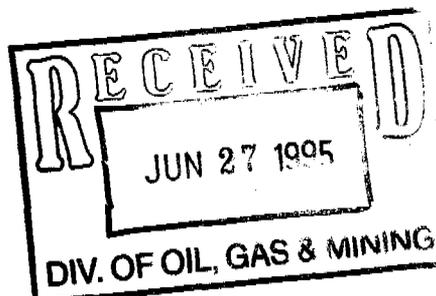
If the Division disagrees with our recommendations, please do not hesitate to contact me before we commence with the proposed activities.

Sincerely,

A handwritten signature in cursive, appearing to read 'Johnny Pappas'.

 Johnny Pappas
 Environmental Engineer

Enclosures

 cc: John Borla
 Chrono: JP950603ltr


June 26, 1995



EarthFax

Mr. Johnny Pappas
Senior Environmental Engineer
Cyprus Plateau Mining Corporation
Post Office Box P.M.C.
Price, Utah 84501

EarthFax
Engineering Inc.
Engineers/Scientists
7324 So. Union Park Ave.
Suite 100
Midvale, Utah 84047
Telephone 801-561-1555
Fax 801-561-1861

**SUBJECT: Phase I Bond Release Evaluation, ACT007/004
Sowbelly Canyon
Castle Gate Mine, Carbon County, Utah**

Dear Johnny:

Pursuant to your request, I have evaluated the Sowbelly Canyon phase I bond release requirements referenced in a letter addressed to you from the Division, dated April 27, 1995. The requirements are presented in the document titled "Technical Findings for Sowbelly Canyon Reclamation Project and As-Built Submittal", which was attached to the April 27 letter. The requirements were reviewed with Division personnel during a meeting held at the site on June 15, 1995. The following recommendations were developed to address each of the 13 requirements identified in the referenced letter:

- 1. The operator must show that the soil surface is devoid of coal or other objectionable material in quantities that could hinder achieving the revegetation performance standards. A minimum of three more samples must be taken and analyzed for the parameters listed in the mining and reclamation plan. Samples must be taken from the soil profile to a depth of four feet. Samples taken in 1993 were not analyzed for all parameters listed in the mining and reclamation plan, and sample locations and depths were not documented. Amax needs to supply complete test results for these samples and should also show whether they were taken from the upper four feet of the soil profile.**

Soil sampling should proceed as scheduled for June 27, and should follow the soil sampling plan submitted to Henry Sauer on June 19. A minimum of 9 soil samples should be collected down to a depth of 4 feet, and the samples should be tested for the parameters listed in Section 3.2 of the permit. Sample locations should be documented for future reference.

In regard to the Division's concern over exposed coal at the surface, the R645 regulations do not directly mandate that the reclaimed surface be free of coal particles. Instead, the regulations address the issue through vegetation performance standards. It is anticipated that hand raking of the small localized areas where coal is exposed will be sufficient to remove objectionable particles and minimize adverse affects on vegetation. However, to allay the Division's concerns, a discrete soil sample of the coal/waste rock particles should be collected and tested in accordance with Table 2 of "Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining." The results of the tests can be used to determine whether the coal is innocuous, or whether it is detrimental to vegetation establishment.

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- 2. Amax must submit information about the nature of refuse materials in the area of SBRD-4 and provide justification for the variances to the originally approved plans for this area. Plans for final reclamation and removal of the sediment pond and reestablishment of natural drainage channels through this area also need to be provided since the originally approved plans have now been altered.**

The exposed coal refuse should be sampled as discussed in Item #1. Justification can be included in the permit text to explain why the profile of SBRD-4 is raised above the proposed profile of SBRD-4 (refuse was found). The final reclamation plan should be revised, since the existing final reclamation plan cannot be implemented.

There appears to be insufficient borrow material in the embankments to completely fill Pond 017. Depending on scheduling, the concrete from the Sowbelly substation could be disposed of in Pond 017, and the embankment material used to cover the concrete. If substation demolition does not take place concurrently with final reclamation grading, then a small depression will be left once the available borrow from the embankments is pushed into the pond. To bring more water into the small depression, SBRD-4 could be routed through the remnants of Pond 017. The inlet and outlet channels would have to be designed to convey the peak flow from the 10-year, 6-hour storm. The existing SBRD-4 channel would be eradicated below where the new channel would feed into the small depression, and a new channel built to connect the small depression to SBRD-8. Alternately, the small depression could be moved southwest into the existing alignment of SBRD-4 so that SBRD-4 can be utilized. An exploratory trench should be excavated to determine the thickness of refuse below where the new outlet would exit the small depression and below SBRD-4 where the small depression could be located.

- 3. Amax must reclaim ancillary road A-2 because it is not needed for the postmining land use.**

The wheel ruts in SBRD-1D should be removed, and boulders put alongside SBRD-1 to keep vehicular traffic out of the channel. Road A-2, as shown on Exhibit 3.2-13, should continue to be considered a temporary road. As stated in the permit, the road is scheduled to be reclaimed once vegetation is established (Section 3.2-5(1)).

- 4. The Operator must eliminate all high walls or provide justification for their retention.**

The "highwall" of concern is located in proximity to the No. 5 Fan Portal. A highwall, by regulatory definition, is the face of exposed overburden for entry to underground coal mining activities. There has been some discussion as to whether the highwall is simply a cutslope and not a highwall. Although there may be some validity to this approach, covering the disturbed slope above the fan portal should put an end to the argument.

There are 2 sandstone outcrops that flank the sides of exposed colluvial material above where the fan portal was located. It is recommended that the colluvial material be covered completely with suitable fill at a slope of 2:1. The sandstone outcrops are believed to be beyond the "face" immediately over the old portal; and thus, do not need to be covered. Borrow material can be taken from one of several places in the central portion of the reclaimed area to use as fill against the cutslope.

5. The Operator must correct a depression in the channel west of Pond 016.

The depression occurs where an extension of road A-2 enters channel SBRD-1D (sta 9+10). This section of the channel should be repaired to assure adequate flow depth, a smooth profile, sufficient riprap, and satisfactory grading adjacent to the channel. The riprap in the base of the channel at this location should be removed, and the underlying soils excavated to no less than 4 feet below the proposed top of bank riprap. The subgrade soils could be sampled for filter determination, or a filter fabric could be installed (filter fabric was installed under sections SBRD-1A, 1B, and 1C). Riprap of D_{50} equal to 6 inches should be placed to a thickness of 12 inches in the base of the channel. Voids in the side slope riprap should be filled with riprap as necessary.

6. The Operator must re-seal the two portals and the sinkhole that has formed east of Pond 016.

Both portals in Sowbelly Canyon were sealed in 1991 by Redpath Construction of Phoenix, Arizona. The seals were apparently constructed in conformance with permit Figure 3.1-3. The portals and the sinkhole have been backfilled since the Division drafted their comments. The backfilling appears satisfactory, although routine visual monitoring of these areas should continue.

7. All diversions must include, at a minimum, 6 inches of freeboard above the size requirements which pass the design (100-year, 24-hour) storm event. Areas that do not have adequate flow depth to contain the 100-year, 24-hour storm runoff will need to be modified or reconstructed to the original design size.

R645-301-742.323 requires that permanent intermittent diversions (SBRD-1, SBRD-8, SBRD-9) be designed to safely pass the peak runoff of a 100-year, 6-hour precipitation event, and not the 100-year, 24-hour event. Although the minimum freeboard is not directly regulated, the Division has chosen to specify a minimum freeboard of 6 inches (R645-301-742.314). This requirement is not unreasonable. Previous field measurements indicated that the design peak flow should be contained within all channels. However, there were several places where the actual channel depth resulted in freeboard of less than 6 inches. The shallowest places were identified during the June 15 meeting (SBRD-1 from 4+50 to 5+50, SBRD-1 from 9+00 to 9+50, SBRD-4 from 4+00 to 5+00). Since the as-built channel measurements were done in October 1994, the spring runoff may have caused some

rearrangement and settlement of the riprap along other reaches of the channels. In addition to repairing the three specific areas already identified, it is recommended that the balance of the channels be inspected for sections that could be construed to have less than 6 inches of freeboard. Touch-up work on sections identified during this inspection should completely resolve this issue.

- 8. SBRD-1D should be repaired from damage caused by vehicle traffic during reclamation activities. The channel below the compacted area must be protected from the increase energy caused by the compacted riprap.**

The riprap on the base of SBRD-1D (sta 9 + 10 to 21 + 00) will be roughened to remove the wheel tracks. Several large boulders will be placed on the west side of the channel where the temporary road now enters the channel (sta 9 + 10). The boulders should keep wheeled vehicles out of the channel. Immediately below station 9 + 10, the riprap is larger than that above station 9 + 10. Once the repairs are made to this area (see item #5), the riprap should remain stable, provided the peak flows are less than the design peak flow.

- 9. The berm diversions which feed the two ponds must be shown on maps as diversions. The maps should show sufficient contours to determine whether flow will reach its intended pond.**

The berm diversions have been relabeled on Exhibit 3.2-13, Table 3.2-19, and Table 3.2-20. The contours have been altered to show that flow will reach the ponds. Exhibit 3.2-13 and the revised tables are enclosed.

- 10. The berm diversions must be repaired and modified to ensure flow will reach its proper destination.**

Two short sections of berms have been identified as requiring repair: a 100 foot section of the berm immediately north of the top of Pond 016, and a 40 foot section of the Pond 017 berm diversion on the west side of SBRD-1 near station 9 + 50. Both of the berm diversions will be repaired such that the berm diversions are continuous and no less than 1.5 feet deep.

- 11. Riprap in the reclamation channels must meet the quantity and gradation standards set forth in the originally approved MRP designs.**

Generally, the riprap is in conformance with the MRP designs. The exceptions are the three sections of channels noted in item #7. These areas will be repaired.

- 12. Alternate sediment control measures must be shown on appropriate maps. A brief description of the measure and the area that reports to each measure should be shown.**

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Exhibit 3.2-13 has been revised to show the as-built location of the ASCMs and the area that reports to each sediment control measure. Exhibit 3.2-13 is enclosed.

13. **Sediment pond maps and the reclamation as-built maps must be made to reflect the actual elevations. These elevations should be the same on all maps.**

Exhibits 3.2-13 and 3.2-14 have been revised to show the proper as-built elevations. Both exhibits are enclosed.

Please review these recommendations so that they may be forwarded to the Division by June 27, 1995, which is the deadline established by the Division in their April 27 letter. We appreciate the opportunity to support you in the reclamation efforts at the Castle Gate Mine.

Sincerely,



William S. Hendrickson, P.E.
Civil Engineer

Enclosures

cc: Chris Hansen (EarthFax)

TABLE 3.2-19

**SOWBELLY CANYON
 RECLAMATION AS-BUILT HYDROLOGY
 DIVERSION DISCHARGE SUMMARY**

DIVERSION DITCH	CONTRIBUTORY WATERSHED	TOTAL DRAINAGE AREA (Acres)	DESIGN DISCHARGE (cfs)
SBRD-1A	SBRWS-U6,U7A, U7B,U8,U9,U10,R1	1167.3	265.16 ^(a)
SBRD-1B	SBRWS-U6,U7A, U7B,U8,U9,U10,R1	1167.3	265.16 ^(a)
SBRD-1C	SBRWS-U6,U7A U7B,U8,U9,U10,R1	1167.3	265.16 ^(a)
SBRD-1D	SBRWS-U6,U7A, U7B,U8,R1	1134.5	252.47 ^(a)
SBRD-2	SBRWS-U9	121.4	1.99 ^(b)
SBRD-3	SBRWS-U3	39.6	2.04 ^(b)
SBRD-4A	SBRWS-U5	130.7	4.45 ^(b)
SBRD-4B	SBRWS-U5	130.7	4.45 ^(b)
SBRD-5	SBRWS-U1	17.2	1.04 ^(b)
SBRD-6	SBRWS-U2	5.5	0.37 ^(b)
SBRD-7	SBRWS-U1,U2	22.7	1.41 ^(b)
SBRD-8	SBRWS-U6,U7A, U7B,U8,U9,U10,R1	1167.3	265.16 ^(a)
SBRD-9	SBRWS-U7A	632.0	141.10 ^(a)
SBRD-10	SBRWS-U7B	353.0	13.38 ^(b)
SBRD-11	SBRWS-U10	7.8	0.42 ^(b)
BERM DIVERSION TO POND 016	SBRWS-U8, SBRWS-R1 ^(c)	17.4	1.13
BERM DIVERSION TO POND 017	SBRWS-U6, SBRWS-R1 ^(c)	29.1	2.32

^(a) Peak discharge flow calculated using the 100-Yr 6-Hr storm event.

^(b) Peak discharge flow calculated using the 10-Yr 6-Hr storm event.

^(c) Only part of the R1 watershed flows to the berm. See calculations in Appendix 3.2I.

TABLE 3.2-20
SOWBELLY CANYON
RECLAMATION AS-BUILT HYDROLOGY CHANNEL SUMMARY

RECLAMATION CHANNEL ^(a)	MINIMUM BOTTOM WIDTH ^(b) (FT)	SIDE SLOPE H:V	MINIMUM DEPTH (FT)	MAXIMUM SLOPE (%)	MINIMUM SLOPE (%)	MAXIMUM FLOW DEPTH (FT)	FREEBOARD (FT)	MAXIMUM VELOCITY (FPS)	RIPRAP REQUIRED D ₅₀ ^(c) (IN)	ACTUAL RIPRAP ^(d) D ₅₀ (IN)
SBRD-1A	10	2.0:1	2.0	12	12	1.50	0.50	13.6	18	18, F
SBRD-1B	10	2.5:1	2.0	4	4	1.98	0.02	9.0	7	18, F
SBRD-1C	10	2.0:1	2.0	9	6	1.82	0.18	12.3	15	18, F
SBRD-1D	10	2.0:1	2.0	6	3	1.91	0.09	12.2	5	5, NF
SBRD-2	4	1.7:1	1.5	13	3	0.19	1.31	3.9	2	4, NF
SBRD-3 ^(e)	-	-	-	-	-	-	-	-	-	-
SBRD-4A	4	1.5:1	1.7	22	22	0.17	1.53	6.2	4	4, NF
SBRD-4B	3	2.0:1	1.5	15	4	0.31	1.19	6.1	3	3, NF
SBRD-5 ^(e)	-	-	-	-	-	-	-	-	-	-
SBRD-6 ^(e)	-	-	-	-	-	-	-	-	-	-
SBRD-7 ^(e)	-	-	-	-	-	-	-	-	-	-
SBRD-8	4	2.0:1	3.3	9	9	2.21	1.09	14.3	^(f)	^(f) , NF
SBRD-9	9	2.4:1	1.4	4	4	1.32	0.08	8.8	4	5, NF
SBRD-10	5	2.4:1	1.3	11	4	0.46	0.84	6.6	4	4, NF
SBRD-11	3	2.0:1	1.0	30	22	0.05	0.95	2.9	1	6, NF
BERM DIVERSION TO POND 16	0	2.5:1,4:1	1.5	6	3	0.37	1.13	3.4	NONE	NONE, NF
BERM DIVERSION TO POND 17 ^(g)	0	2.5:1,4:1	1.5	13	3	0.48	1.02	5.4	NONE ^(h)	NONE, NF

- (a) See Exhibit 3.2-13 for channel and reach locations.
- (b) Minimum bottom width measured at minimum depth from top of channel.
- (c) Riprap D₅₀ calculated using the Searcy method developed for the U.S.D.O.T..
- (d) F = Filter fabric installed. NF = No filter required or installed.
- (e) This channel will be constructed when the substation area is reclaimed.
- (f) SBRD-8 is a natural channel with riprap of D₅₀ varying from 4 to 8 inches, underlain by bedrock.
- (g) Short reach of ditch that exceeds 10% slope just above Pond 017 should be closely monitored for erosion.
- (h) The access road (road A-2) ditch below Pond 017 is similar in size.

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TABLE 3.2-21

**SOWBELLY CANYON
 RECLAMATION AS-BUILT HYDROLOGY
 CULVERT SUMMARY**

CULVERT	CONTRIBUTORY WATERSHEDS	TOTAL DRAINAGE AREA (ACRES)	DESIGN DISCHARGE ^(d) (CFS)	SIZE (IN)	INLET TYPE	SLOPE (%)	PEAK VELOCITY (FPS)	REQUIRED RIPRAP D ₅₀ (IN)	ACTUAL RIPRAP D ₅₀ (IN)
SBRC-1 ^(a)	SBRWS-U1,U2	22.7	1.41 ^(e)	36	PROJECTING	3	3.5	NONE	4
SBRC-2 ^(b)	SBRWS-U1	17.2	1.04	-	-	-	-	-	-
SBRC-3 ^(c)	SBRWS-U3,U4,R2	44.8	2.77 ^(e)	54	PROJECTING	9	6.0	4	5
SBRC-4	SBRWS-U5	130.7	4.45	24	PROJECTING	5	6.2	3	3

- (a) Operational phase culvert SBC-10 renamed SBRC-1.
- (b) Culvert will be installed when substation is removed.
- (c) Operational phase culvert SBC-8 renamed SBRC-3.
- (d) Peak discharge flow calculated using the 10-Yr 6-Hr storm event.
- (e) Culvert has the capacity to pass the peak flow from a 100-Yr 6-Hr storm event.

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